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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/355,623
Filing Date: October 05, 1999
Appellant(s): PIIRAINEN, OLLI

Larry J. Hume
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 05/18/2009 appealing from the Office action mailed 03/21/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,357,513	KAY et al.	10-1994
6,084,862	BJORK et al.	07-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-11, 13-15, 16-27 and 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kay et al. (5,357,513).

Regarding claim 1, Kay discloses a transmission method and apparatus used in a radio system that comprises at least one base station B (See figs. 1 and 37) and a number of subscriber terminals U at least two of which transmit access bursts to one and the same base station, the access burst activating between a subscriber terminal and a base station a connection that is established by a signal that is of a certain frequency and is sent in timeslots, characterized in that: a first subscriber terminal is commanded (See figs. 29-30 and col. 11 line 28 to col. 12 line 32, col. 18 lines 1-16) to send to the at least one base station a first signal (RR) using a determined timeslot 1 and a determined carrier frequency 7 (See fig. 16 and col. 13 lines 30-51); a second subscriber terminal is commanded (See figs. 29-30 and col. 11 line 28 to col. 12 line 32, col. 18 lines 1-16) to send to the at least one base station a second signal (RR) using the determined timeslot 1 and carrier frequency 7 simultaneously employed by the first subscriber terminal (See fig. 16 and col. 13 lines 30-51); and the second subscriber terminal is commanded to adjust a transmission moment of the second signal (RR)

within the determined timeslot 7 (in accordance to the assigned sub-slot) (See col. 11 lines 36-54) so that the at least one base station receives the transmitted first and second signals at different moments within the same timeslot 7 (See fig. 16). However, Kay does not mention that the base station comprises a plurality of RF heads and access bursts are received in the base station using different RF heads. Since base station with multiple RF heads is widely known in the art; therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ multiple RF heads to the base station of the radio system as disclosed by Kay for the advantage of enhancing signal quality as well as extending coverage of the base station to areas (e.g. pico-cellular environment) where signals are degraded due to terrain or obstacles such mountains, trees, buildings or walls. Further, due to the mobility of subscriber terminals U (See fig. 1), transmissions including access bursts being received in the base station via different RF heads.

Regarding claim 2, Kay further discloses the transmission moment is adjusted before an actual connection is established (See col. 13 lines 59-60).

Regarding claims 3-4, Kay further discloses the command is sent to delay or advance the transmission moment of the signal (See figs 29-30 and col. 18 lines 3-10).

Regarding claims 5-6, Kay further discloses the command is sent to advance or delay the transmission moment at most an 11-bit period (See fig. 14 and col. 12 line 65 to col. 13 line 3).

Regarding claim 7, Kay further discloses the transmission moment of the signal is adjusted by at most the tail bits at the beginning of the burst and the guard period at the end of the burst (See fig. 14).

Regarding claim 8, Kay further discloses the impulse responses are formed from the signals received by the base station being defined to have a length of a minimum of substantially 3 bits (See fig. 18 and col. 14 lines 45-56).

Regarding claim 9, Kay further discloses at least two signals of the same frequency are separated from each other, the signals have been received by the base station from one and the same timeslot (See figs. 14-16).

Regarding claim 10, Kay further discloses the signals are separated by means of training sequences of signals received at different moments (See fig. 14 and col. 12 line 43 to col. 13 line 3).

Regarding claim 11, Kay further discloses the signals received by the base station are correlated and on the basic of correlation, the signal with the best quality and for example the highest energy is selected, and the signal is then used as a connection-establishing signal (See col. 15 lines 8-53).

Regarding claim13, Kay further discloses the sent command is to change the signal transmission frequency, if the signal transmitted by the subscriber terminal interferes with a signal transmitted by another subscriber terminal (See col. 17 lines 53-68).

Regarding claim 14, Kay further discloses the frequencies used in different signals are predetermined (See figs. 15-17).

Regarding claim 15, Kay further discloses the signals are transmitted by the Time Division Multiple Access (TDMA) method (See figs. 15-17 and col. 3 lines 32-35).

Regarding claim 16, Kay discloses as cited in claim 1. Kay further discloses that the method is suited for cellular communication system utilized TDMA (See fig. 15-17 and col. 3 lines 32-35). However, Kay does not mention that the method is particularly suited for the radio system, for example, in offices. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a method as disclosed by Kay in the radio system in offices for the advantage of extending the application of the method into various environments.

Claims 17-27 and 29-34 are rejected for the same reasons as set forth in claim 1-11 and 13-16, as apparatus.

2. Claims 12 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kay et al. (5,357,513) in view of Bjork et al. (6,084,862).

Regarding claim 12, Kay discloses as cited in claim 1. However, Kay does not explicitly mention that the signals received by the base station are correlated by means of a training sequence, the signal formed on the basic of the correlation are placed in windows, and the summed energies of the impulse responses of the signals placed in the window are compared. Bjork discloses signals received by the base station are correlated by means of a training sequence, the signal formed on the basic of the correlation are placed in windows, and the summed energies of the impulse responses of the signals placed in the window are compared (See figs. 2, 8 and col. 3 lines 30-50,

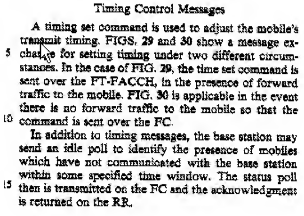
col. 5 line 48 to col. 6 line 13, col. 6 lines 45-56, col. 9 line 18 to col. 12 line 15). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Bjork in the method and apparatus as disclosed by Kay for the advantage of making accurate measurements of time dispersion.

Claim 28 is rejected for the same reasons as set forth in claim 12, as apparatus.

(10) Response to Argument

With respect to the appellant's argument filed on 05/18/2009, the response(s) are follows:

The appellant mainly argued that Kay directs to a single subscriber and fails to teach or suggest that two mobile subscriber stations both transmitting using a determined time slot and a determined frequency and adjusting a transmission moment so that the base station receives the transmitted first and second signals at different moments within the same timeslot, and further Bjork fails to make up for the deficiencies of Kay (See Appeal Brief, Argument section). The examiner respectfully disagrees with the appellant. In this instant case, as clearly disclosed by Kay, the base station can instruct {TimeSetCrmd}



Timing Control Messages

A timing set command is used to adjust the mobile's transmit timing. FIGS. 29 and 30 show a message exchange for setting timing under two different circumstances. In the case of FIG. 29, the time set command is sent over the FT-FACCH, in the presence of forward traffic to the mobile. FIG. 30 is applicable in the event there is no forward traffic to the mobile so that the command is sent over the FC.

In addition to timing messages, the base station may send an idle poll to identify the presence of mobiles which have not communicated with the base station within some specified time window. The status poll then is transmitted on the FC and the acknowledgment is returned on the RR.

the same or different subscriber terminals to adjust the subscriber terminal's transmit timing and to send back their acknowledgement(s) using the instructed sub-slot of the same time slot (equivalent to "different moments within the same time slot") and the instructed frequency (See Kay, figs. 10, 30 and col. 11 line 28 to col. 12 line 7) as shown:

As shown in FIG. 16, according to the present invention, the FC channel or slot is divided into two sub-slots, wherein each sub-slot comprises a SYNC field and a data field. Each data field of each sub-slot carries two messages, messages A and B. The messages may be destined for the same or different mobiles. While there are two messages in each data field, the color code and error control bits are shared, as shown in the following table.

Forward Control Sub-Slot Data Field

TYPE	A	B
Message Type	5	5
Sport Number	1	1
Division Group	1	1
Frame Indicator	1	1
RR Sub-Slot	4	4
Assign	8	8
Mobile ID	8	8
Color	8	
CRC	16	
0 Padding	5	
Spare	3	
Total	88 + 1	
FEC X 1/2	134	
SYNC	28	
Total	162 bits	

The 88+1 representation of the data is given to show that the rate ½ coder will put out half an FEC symbol for the last symbol time.

The mobile ID is an 8-bit identifier for the mobile which is assigned when it enters the DSI pool. The assign field indicates the slot and channel being assigned. The RR sub-slot field is a 4-bit indication of the RR sub-slot to be used by the mobile to acknowledge this message if the message requires an acknowledgment. The message type is a 5-bit designation of the type of message being sent. The message types are:

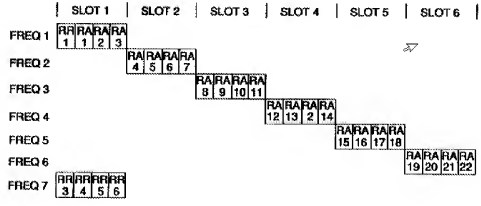
Wherein one or different subscriber terminals (i.e. first and second subscriber terminals), in response to the base station's command, adjust their transmit timings and send back their acknowledgement(s) {TimeSetAck}

(on Connect) or freed (on Release). The four message type bits in the RR sub-slot indicate a message as one of the following:
(1) Hand off acknowledge,
(2) Power set acknowledge,
(3) Time set acknowledge,

using the instructed sub-slot of the same time slot and the instructed frequency (See Kay, figs. 16, 30 and col. 13 lines 30-45, col. 18 lines 1-16) such that the base station receives the transmitted first (i.e. RR3) and second signals (i.e. RR4) (i.e. first and

second subscriber terminals' acknowledgements such as RR3-RR6) at different moments within the same time slot (different sub-slots of the same time slot) as well as at the same frequency as shown:

FIG. 16.



The appellant also argued that Kay fails to teach or suggest the claimed invention wherein transmissions are received in the base station using different RF heads (See Appeal Brief, Argument section). As recognized in the above rejections, Kay does not mention that the base station comprises a plurality of RF heads and transmissions are received in the base station using different RF heads. However, since base station with multiple RF heads is widely known in the art (the Examiner

would like to present GB 2308041 published on November, 2007, which has been presented to the appellant in the Final Office Action mailed on 03/07/2007, as evidence); therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ multiple RF heads to the base station of the radio system as disclosed by Kay for the advantage of enhancing signal quality as well as extending coverage of the base station to areas (e.g. pico-cellular environment) where signals are degraded due to terrain or obstacles such mountains, trees, buildings or walls, wherein due to the mobility of subscriber terminals U within the coverage area of the base station (See fig. 1), transmissions being received in the base station via different RF heads.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Tuan A Tran/

Primary Examiner, Art Unit 2618

09/12/2009

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